AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (currently amended) A system for transmitting a first clock signal through a packet-based network comprising:

a first node ~~configured to measure~~ to take a plurality of clock frequency ~~of~~ measurements of the first clock signal and ~~configured~~ to calculate ~~an~~ corresponding accuracy ~~indicator~~ indicators of the ~~measured~~ clock frequency measurements, each ~~the~~ accuracy indicator being a time duration of measurement, and the clock frequency measurements being of increasing accuracy with respect to the first clock signal in a first phase of operation;

a second node ~~configured~~ to receive the clock frequency ~~measurement~~ measurements and ~~the~~ corresponding accuracy indicators ~~indicator of the clock frequency measurement and configured~~ and to synthesize ~~the~~ respective second clock ~~signal~~ signals based on the clock frequency ~~measurement~~ measurements and ~~the~~ corresponding accuracy ~~indicator~~ indicators; and

a packet-based network to transmit the ~~measured~~ clock frequency measurements and ~~the~~ corresponding accuracy ~~indicator~~ indicators from the first node to the second node,

wherein, in the first phase of operation, the synthesis of the second clock signals involves incremental convergence of the second clock signals toward the first clock signal based on the received clock frequency measurements of increasing accuracy.

2. (currently amended) A system for transmitting bit synchronous data through a packet-based network comprising:

a first node ~~configured~~ to receive the bit synchronous data for transmission through the packet-based network, the first node including measurement hardware to generate a plurality of clock frequency measurements based on a first clock signal received by the first node ~~measurement of the bit synchronous data and an~~ and a corresponding accuracy indicator for each of the clock frequency measurements, the clock frequency ~~measurement~~ measurements and ~~the~~ corresponding accuracy ~~indicator~~ indicators to be transmitted through the packet-based network, and the clock frequency measurements being generated with increasing accuracy with respect to the first clock signal in a first phase of operation; and

a second node ~~configured~~ to receive the clock frequency ~~measurement~~ measurements and corresponding accuracy ~~indicator~~ indicators from the first node via the packet-based network, ~~and~~ the second node including signal synthesizer hardware to synthesize [[a]] respective second clock ~~signal~~ signals from the received clock frequency ~~measurement~~ measurements and ~~the~~ corresponding accuracy ~~indicator~~ indicators to retrieve the bit synchronous data,

wherein, to generate the clock frequency ~~measurement~~ measurements, the measurement hardware measures a number of counts during a predetermined period of time, and the accuracy indicator is a period of time for measuring the number of counts, and

wherein, in the first phase of operation, the synthesizer hardware substantially reproduces the first clock signal at the second node based on incremental convergence of the second clock signals based on the received clock frequency measurements of increasing accuracy.

3. (currently amended) A method for adaptive clocking in a packet-based network between a first node and a second node, the method comprising: ~~the steps of:~~

receiving a first clock signal for transmission through the packet-based network at the first node;

repeatedly measuring, in a first phase, the first clock signal to obtain a plurality of frequency ~~measurement~~ measurements of increasing accuracy at the first node;

determining ~~an~~ a corresponding accuracy indicator for ~~the~~ each frequency measurement at the first node, the accuracy indicator being a time duration of measurement;

individually transmitting ~~the~~ each frequency measurement ~~and the~~ with its corresponding accuracy indicator through the packet-based network from the first node to the second node;

receiving ~~the~~ each frequency measurement and ~~the~~ corresponding accuracy indicator at the second node;

deriving, in the first phase, ~~a~~ respective second clock ~~signal~~ signals from the frequency ~~measurement~~ measurements and ~~the~~ corresponding accuracy ~~indicator~~ indicators at the second node, substantially to represent the first clock signal based on incremental converging of the second clock signals based on the received clock frequency measurements of increasing accuracy; and

transmitting the derived second clock signals ~~signal~~ from the second node to user equipment connected to the second node.

4. (currently amended) In a packet-based network with a first transmitting node and a second receiving node, a

method of determining a frequency of a transmitting clock at the second receiving node, said method comprising: ~~the steps of:~~

receiving a first plurality of packets;

determining a total time ~~for~~ of transmission for each packet;

identifying, from the first plurality of received packets, a first predetermined number of packets ~~in the plurality of received packets~~ that have the first predetermined number of shortest total transmission times of the total transmission times of the plurality of received packets, the first predetermined number of packets identified being greater than one; and

deriving the frequency of the transmitting clock by use of the identified first predetermined number of packets having the first predetermined number of shortest total transmission times.

5. (previously presented) The method of claim 4, wherein the derived frequency is used to maintain buffer fill at the second receiving node.

6. (currently amended) The method of claim 4, additionally comprising: ~~the steps of:~~

identifying the packet ~~in the first plurality of received~~ of the first predetermined number of packets ~~that has~~ having the shortest total transmission time;

receiving a second plurality of packets;

determining a total time ~~for~~ of transmission for each packet in the second plurality of packets;

identifying, from the second plurality of received packets, a second predetermined number of packets ~~in the second plurality of received packets~~ that have the shortest total transmission times; and

deriving the frequency of the transmitting clock ~~through~~ based on the identified second predetermined number of packets ~~in the second plurality of packets~~ and the identified packet with the shortest total transmission time in the first plurality of packets.

7. (currently amended) The system of claim 1, wherein the synthesis of the second clock signals includes multiplying the clock frequency ~~measurement~~ measurements by the corresponding accuracy ~~indicator~~ indicators.

8. (currently amended) The system of claim 1,

wherein the second node ~~is configured to receive~~ receives one of a first indicator and a second indicator with ~~the~~ each frequency measurement, the first indicator

representing ~~a~~ the first phase of operation for the second node, and the second indicator representing a second phase of operation for the second node, and

wherein, in the second phase of operation, ~~the~~ a frequency of the synthesized second clock ~~signal~~ signals is maintained.

9. (currently amended) The system of claim 2, wherein synthesis of the second clock ~~signal~~ signals includes multiplying the clock frequency ~~measurement~~ measurements by ~~the~~ corresponding accuracy ~~indicator~~ indicators.

10. (currently amended) The system of claim 2,

wherein the second node ~~is configured to receive~~ receives a phase of operation indicator from the first node via the packet-based network, the phase of operation indicator being one of a first phase of operation indicator and a second phase of operation indicator, and

wherein the second phase of operation indicator indicates that ~~the~~ an associated clock frequency measurement received by the second node from the first node is accurate to a predetermined threshold.

11. (currently amended) The method of claim 3,

wherein said individually transmitting further includes transmitting a phase indicator through the packet-based network from the first node to the second node,

wherein the phase indicator is one of a first phase indicator and a second phase indicator,

wherein the first phase indicator indicates capturing and recovering of the first clock signal, and

wherein the second phase indicator indicates maintaining the first clock signal.

12. (currently amended) The method of claim 4, wherein the identified first predetermined number of packets ~~identified~~ is three.

13. (currently amended) The method of claim 6,

wherein the identified first predetermined number of packets identified is three, and

wherein the identified second predetermined number of packets identified is three.

14. (new) The system of claim 1, further comprising an encryption element associated with the first node.

15. (new) The system of claim 1, wherein the clock frequency measurements are absolute values.

16. (new) The system of claim 2, further comprising an encryption element associated with the first node.

17. (new) The system of claim 2, wherein the clock frequency measurements are absolute values.

18. (new ) The method of claim 3, wherein the clock frequency measurements are absolute values.

19. (new) The method of claim 4, wherein the frequency of the transmitting clock is derived based on incremental convergence of increasing accuracy.

20. (new) The method of claim 4, further comprising encrypting, at the first transmitting node, and decrypting, at the second receiving node.